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ABSTRACT

Interest rates can significantly influence people's behavior. When rates decline, homeowners rush to buy new homes and refinance old mortgages; automobile buyers scramble to buy new cars; the stock market soars, and people tend to feel more optimistic about the future. But even though individuals respond to changes in rates, they may not fully understand what interest rates represent or how different rates relate to each other. This booklet is intended to help people better understand interest rates and how they are influenced by these economic forces. The first section, "Levels of Interest," examines the forces that determine the general level of rates. This section discusses basic factors of supply and demand for funds and the function of banks and other similar institutions in meeting the needs of savers and borrowers. It examines other factors such as fiscal policy and the actions of the Federal Reserve System. The second section, "Different Interests," examines the variations among individual rates, explaining why a 6-month Treasury bill may have one rate, business loans another, and home mortgages still a third. This section discusses the unique characteristics of each credit transaction, such as risk, rights, and tax considerations, and how these factors affect the decision-making process of borrowers and lenders. Contains a list of additional readings. Included with the booklet is a teaching guide that contains content questions and answers and activity suggestions. (BT)

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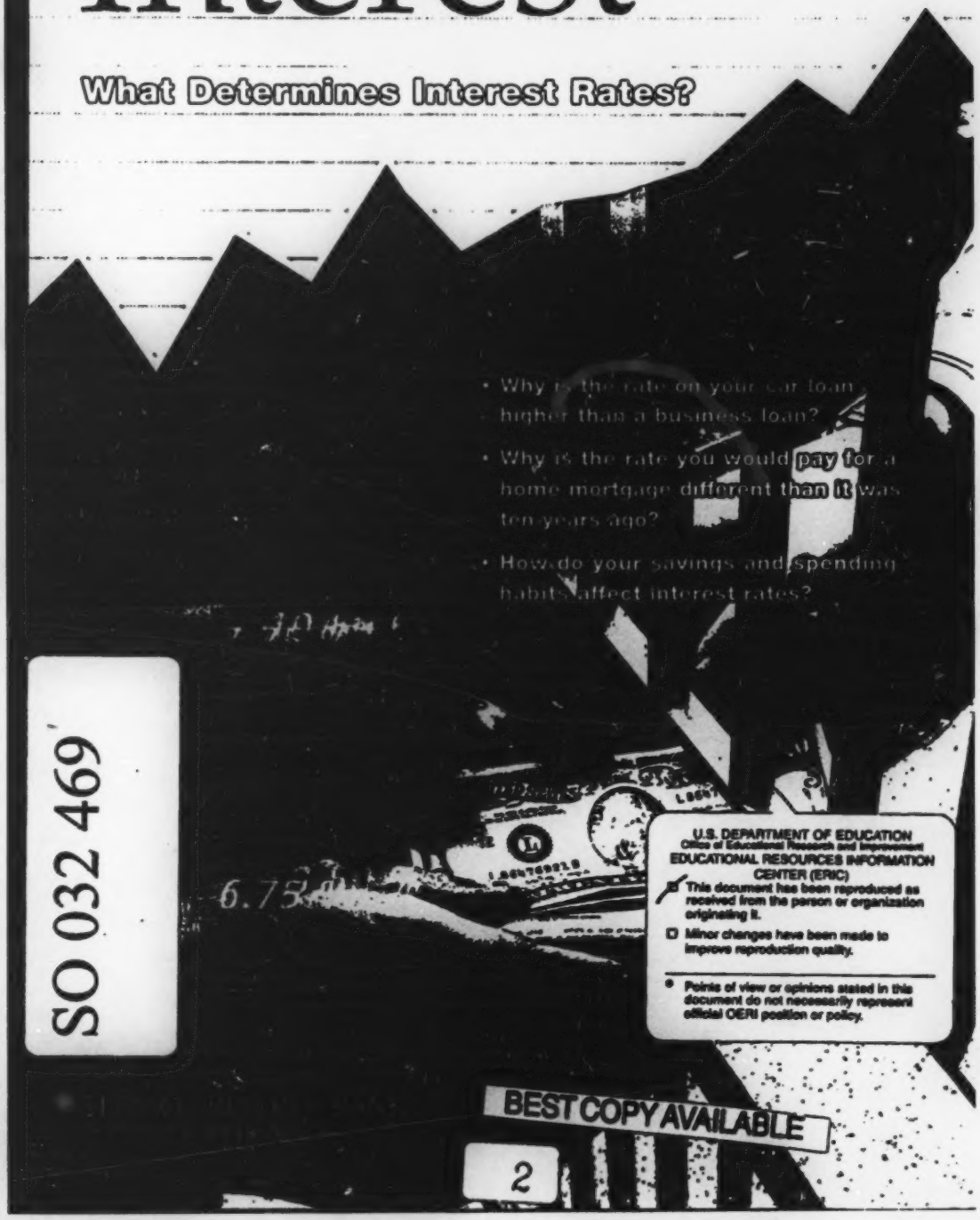
Points of Interest

What Determines Interest Rates?


• Why is the rate on your car loan higher than a business loan?
• Why is the rate you would pay for a home mortgage different than it was ten years ago?
• How do your savings and spending habits affect interest rates?

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Points of Interest is one of a series of essays adapted from articles in *On Reserve*, a newsletter for economic educators published by the Federal Reserve Bank of Chicago. The original article was written by Keith Feiler and revised by Tim Schilling.

For additional copies of this essay — or for information about other Federal Reserve publications on money and banking, the financial system, the economy, consumer credit, and other related topics — contact:

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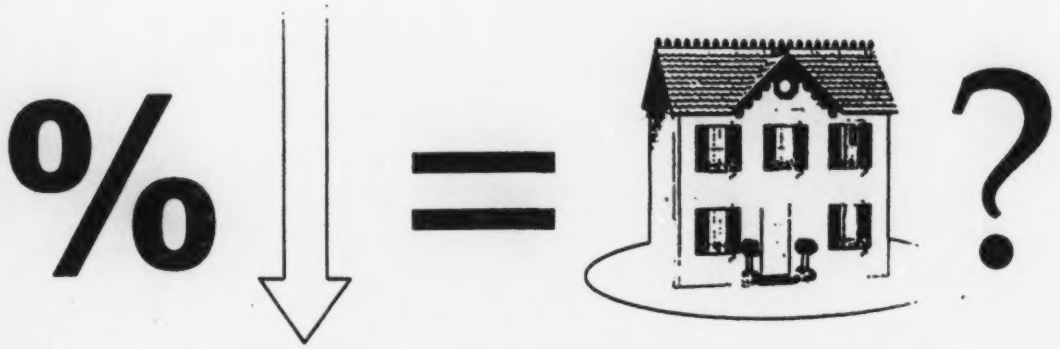
Interest rates can significantly influence people's behavior. When rates decline, homeowners rush to buy new homes and refinance old mortgages; automobile buyers scramble to buy new cars; the stock market soars, and people tend to feel more optimistic about the future.

But even though individuals respond to changes in rates, they may not fully understand what interest rates represent, or how different rates relate to each other. Why, for example, do interest rates increase or decrease? And in a period of changing rates, why are certain rates higher, while others are lower?



To answer these questions, we must separate movements in the general level of interest rates from differences in individual rates. As we can see in the chart below, rates rose steadily from 1979 to 1981 and generally fell after that, with a few upward turns to break the downward trend. Because interest rates tend to move together, we can characterize certain periods as times of high or low interest rates. For example, in 1981 the general level of interest rates was higher than the general level in 1993.

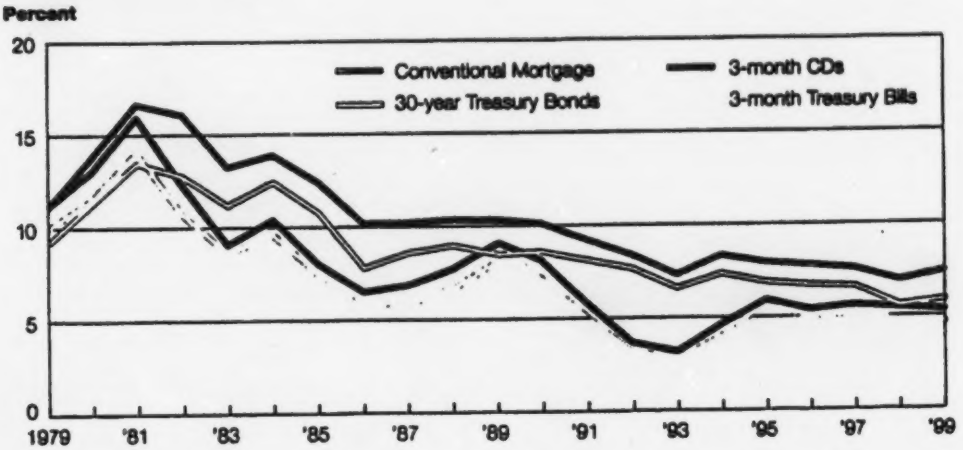
As we also can see in the chart, however, individual rates tend to differ, even though they are moving in the same general direction. Thus a 30-year Treasury bond may have a higher rate than a 3-month certificate of deposit. Similarly, a mortgage loan may have a lower rate than an automobile loan.

These similarities and differences are not determined by luck, coincidence, a world conspiracy of money barons, or even the Federal Reserve. Rather, they are determined by strong, impersonal economic forces in the marketplace, which reflect the personal choices of millions of individual borrowers and lenders.

This publication is intended to help you better understand interest rates and how they are influenced by these economic forces. The first section, *Levels of Interest*, examines the forces that determine the general level of rates. This section discusses basic factors of supply and demand for funds and the function of banks and other similar institutions in meeting the needs of savers and borrowers. It also examines other factors such as fiscal policy and the actions of the Federal Reserve System.

The second section, *Different Interests*, examines the variations among individual rates, explaining why a 6-month Treasury bill may have one rate, business loans another, and home mortgages still a third. This section discusses the unique characteristics of each credit transaction, such as risk, rights, and tax considerations, and how these factors affect the decision-making process of borrowers and lenders.

Interest Rate Trends



Levels of Interest

The Price of Credit

To understand the economic forces that drive (and sometimes are driven by) interest rates, we first need to define interest rates. An interest rate is a price, and like any other price, it relates to a transaction or the transfer of a good or service between a buyer and a seller. This special type of transaction is a loan or credit transaction, involving a supplier of surplus funds, i.e., a lender or saver, and a demander of surplus funds, i.e., a borrower.

In a loan transaction, the borrower receives funds to use for a period of time, and the lender receives the borrower's promise to pay at some time in the future.

The borrower receives the benefit of the immediate use of funds. The lender, on the other hand, gives up the immediate use of funds, forgoing any current goods or services those funds could purchase. In other words, lenders loan funds they have saved—surplus funds they do not need for purchasing goods or services today.

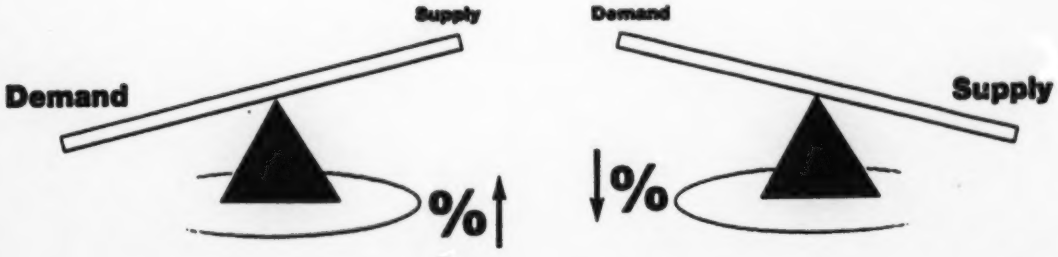
Because these lenders/savers sacrifice the immediate use of funds, they ask for compensation in addition to the repayment of the funds loaned. This compensation is interest, the price the borrower must pay for the immediate use of the lender's funds. Put more simply, interest rates are the price of credit.

Supply and Demand

As with any other price in our market economy, interest rates are determined by the forces of supply and demand, in this case, the supply of and demand for credit. If the supply of credit from lenders rises relative to the demand from borrowers, the price (interest rate) will tend to fall as lenders compete to find use for their funds. If the demand rises relative to the supply, the interest rate will tend to rise as borrowers compete for increasingly scarce funds. The principal source of the demand for credit comes from our desire for current spending and investment opportunities.

The principal source of the supply of credit comes from savings, or the willingness of people, firms, and governments to delay spending. Depository institutions such as banks, thrifts, and credit unions, as well as the Federal Reserve, play important roles in influencing the supply of credit.

Let's examine these sources.



The Source of Demand

Consumption. At one time or another, virtually all consumers, businesses, and governments demand credit to purchase goods and services for current use. In these loans, borrowers agree to pay interest to a lender/saver because they prefer to have the goods or services now, rather than waiting until some time in the future when, presumably, they would have saved enough for the purchase. To describe this preference for current consumption, economists say that borrowers have a high rate of time preference. Expressed simply, people with high rates of time preference prefer to purchase goods now, rather than wait to purchase future goods—an automobile now rather than an automobile at some time in the future, a current vacation opportunity rather than a future opportunity, and present goods or services rather than those in the future.

Although lenders/savers generally have lower rates of time preference than borrowers, they too tend to prefer current goods and services. As a result, they ask for the payment of interest to encourage the sacrifice of immediate consumption. As a lender/saver, for example, one would prefer not to spend $100 now only if the money was not needed for a current purchase and one could receive more than $100 in the future.

Investment. In the use of funds for investment, on the other hand, time preference is not the sole factor. Here consumers, businesses, and governments borrow funds only if they have an opportunity they believe will earn more—that is, create a larger income stream—than they will have to pay on the loan, or than they will receive in some other activity.

Say, for example, a widget manufacturer sees an opportunity to purchase a new machine that can reasonably be expected to earn a 20 percent return, i.e., produce income from the manufacture of widgets equal to 20 percent of the cost of the machine. The manufacturer will borrow funds only if they can be obtained at an interest rate less than 20 percent.

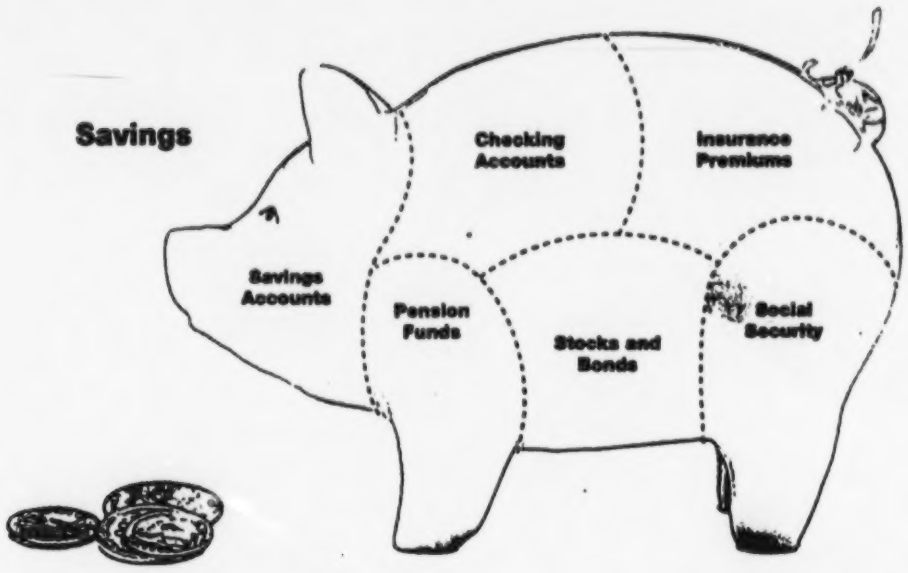
What borrowers are willing to pay, then, depends principally on time preferences for current consumption and on the expected rate of return on an investment.

The Source of Supply

The supply of credit comes from savings—funds not needed or used for current consumption. When we think of savings, most of us think of money in savings accounts, but this is only part of total savings.

All funds not currently used to purchase goods and services are part of total savings. For example, insurance premiums, contributions to pension funds and social security, funds set aside to purchase stocks and bonds, and even funds in our checking accounts are savings.

Since most of us use funds in checking accounts to pay for current consumption, we may not consider them savings. However, funds in checking accounts at any time are considered savings until we transfer them out to pay for goods and services.



Most of us keep our savings in financial institutions like insurance companies and brokerage houses, and in depository institutions such as banks, savings and loan associations, credit unions, and mutual savings banks. These financial institutions then pool the savings and make them available to people who want to borrow.

This process is called financial intermediation. This process of bringing together borrowers and lenders/savers is one of the most important roles that financial institutions perform.

Banks and Deposit Creation

Depository institutions, which for simplicity we will call banks, are different from other financial institutions because they offer transaction accounts and make loans by lending deposits. This deposit creation activity, essentially creating money, affects interest rates because these deposits are part of savings, the source of the supply of credit.

Banks create deposits by making loans. Rather than handing cash to borrowers, banks simply increase balances in borrowers' checking accounts. Borrowers can then draw checks to pay for goods and services. This creation of checking accounts through loans is just as much a deposit as one we might make by pushing a ten-dollar bill through the teller's window.

With all of the nation's banks able to increase the supply of credit in this fashion, credit could conceivably expand without limit. Preventing such uncontrolled expansion is one of the jobs of the Federal Reserve System (the Fed), our central bank and monetary authority. The Fed has the responsibility of monitoring and influencing the total supply of money and credit.

The General Level of Rates

The general level of interest rates is determined by the interaction of the supply and demand for credit.

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When supply and demand interact, they determine a price (the equilibrium price) that tends to be relatively stable. However, we have seen that the price of credit is not necessarily stable, implying that something shifts the supply, the demand, or both. Let's examine several factors that influence these shifts.

Expected Inflation. As we have already seen, interest rates state the rate at which borrowers must pay future dollars to receive current dollars. Borrowers and lenders, however, are not as concerned about dollars, present or future, as they are about the goods and services those dollars can buy, the purchasing power of money.

Inflation reduces the purchasing power of money. Each percentage point increase in inflation represents approximately a 1 percent decrease in the quantity of real goods and services that can be purchased with a given number of dollars in the future. As a result, lenders, seeking to protect their purchasing power, add the expected rate of inflation to the interest rate they demand. Borrowers are willing to pay this higher rate because they expect inflation to enable them to repay the loan with cheaper dollars.

If lenders expect, for example, an eight percent inflation rate for the coming year and otherwise desire a four percent return on their loan, they would likely charge borrowers 12 percent, the so-called nominal interest rate (an eight percent inflation premium plus a four percent "real" rate).

Borrowers and lenders tend to base their inflationary expectations on past experiences which they project into the future. When they have experienced inflation for a long time, they gradually build the inflation premium into their rates. Once people come to expect a certain level of inflation, they may have to experience a fairly long period at a different rate of inflation before they are willing to change the inflation premium.

The effect of an inflation premium can be seen in the chart at right. Although the chart tracks the consumer price index or CPI and the constant maturity 3-year Treasury note rate, one could use almost any inflation measure and interest rate and see a similar pattern. As inflation rose through the late 1970s, it came to be "expected" by lenders as well as borrowers. This "inflation expectation" can be seen by the fact that investors in Treasury notes were demanding a relatively high inflation premium in the early 1980s, even after inflation reached its apex. This was

The Fed and Bank Reserves

The Fed affects the general level of interest rates by influencing the total supply of money and credit that banks can create. When banks create checkbook deposits, they create money as well as credit since these deposits are part of the money supply.

The Fed exerts this influence on the supply of money and credit by affecting bank reserves. These reserves are funds that banks are required to hold in the form of either cash in their own vaults or as a balance at a Fed Bank.

Banks are required to hold a level of reserves equal to a proportion of deposits on their books. For example, a required reserve ratio of 10 percent means that a bank must set aside one dollar for every ten deposit dollars. In other words, a bank cannot owe ten deposit dollars unless it holds one reserve dollar. Hence legal reserve requirements, combined with the given level of reserves, set limits on the amount of credit banks can offer.

Inflation

partially due to the fact that relatively high levels of inflation were fresh in the memories of borrowers and lenders, and there was uncertainty as to how serious policymakers would be in pursuing lower levels of inflation. In 1984, for example, it took only a slight increase in inflation to cause a relatively rapid increase in interest rates.

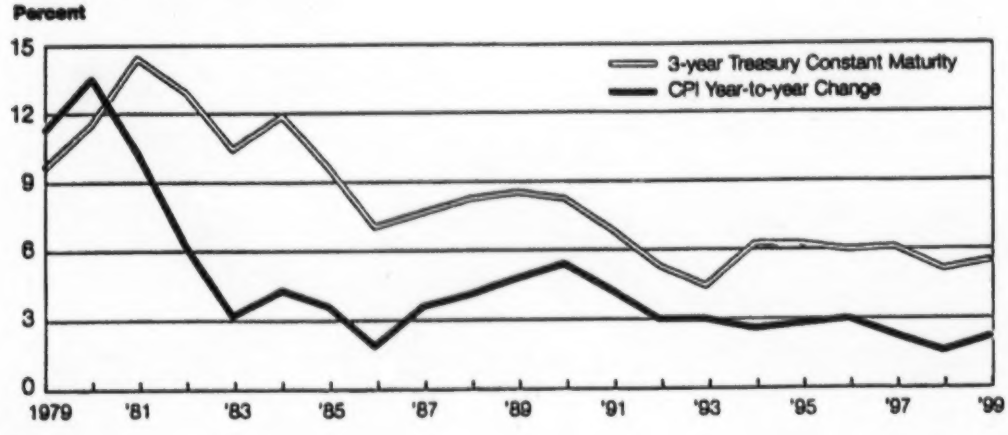
For most of the 1980s, inflation was relatively low and interest rates continued their downward trend with the gap between rates and inflation narrowing. As the memory of high inflation receded, so did pressure for a high inflation premium, as indicated by the relatively modest rise in rates when inflation flared in 1990. Inflationary expectations had been reduced, a goal sought by many monetary policymakers. Indeed, Fed Chairman Alan Greenspan has stated that price stability would be achieved when the expectation of future price changes plays no role in the decisionmaking of businesses and households.

Economic Conditions. All businesses, governmental bodies, and households that borrow funds affect the demand for credit. This demand tends to vary with general economic conditions.

When economic activity is expanding and the outlook appears favorable, consumers demand substantial amounts of credit to finance homes, automobiles, and other major items, as well as to increase current consumption. With this positive outlook, they expect higher incomes and as a result are generally more willing to take on future obligations. Businesses are also optimistic and seek funds to finance the additional production, plants, and equipment needed to supply this increased consumer demand. All of this makes for a relative scarcity of funds, due to increased demand.

On the other hand, when sales are sluggish and the future looks grim, consumers and businesses tend to reduce their major purchases, and lenders, concerned about the repayment ability of prospective borrowers, become reluctant to

Effect of Inflation Premium



lend. As a result, both the supply of and demand for credit may fall. Unless they both fall by the same amount, interest rates are affected.

Federal Reserve Actions. As we have seen, the Fed acts to influence the availability of money and credit by adjusting the level and/or price of bank reserves. The Fed affects reserves in three ways: by setting reserve requirements that banks must hold, as we discussed earlier; by buying and selling government securities (usually U.S. Treasury bonds) in open market operations; and by setting the "discount rate," which affects the price of reserves banks borrow from the Fed through the "discount window."

These "tools" of monetary policy influence the supply of credit, but do not directly impact the demand for credit. Because the Fed directly affects only one side of the supply and demand relationship, it cannot totally control interest rates. Nevertheless, monetary policy clearly does affect the general level of interest rates.

Fiscal Policy. Federal, state and local governments, through their fiscal policy actions of taxation and spending, can affect either the supply of or the demand for credit. If a governmental unit spends less than it takes in from taxes and other sources of revenue, as many have in recent years, it runs a budget surplus, meaning the government has savings. As we have seen, savings are the source of the supply of credit. On the other hand, if a governmental unit spends more than it takes in, it runs a budget deficit, and must borrow to make up the difference. The borrowing increases the demand for credit, contributing to higher interest rates in general.

Interest Rate Predictions

The level of interest rates influences people's behavior by affecting economic decisions that determine the well-being of the nation: how much people are willing to save, and how much businesses are willing to invest.

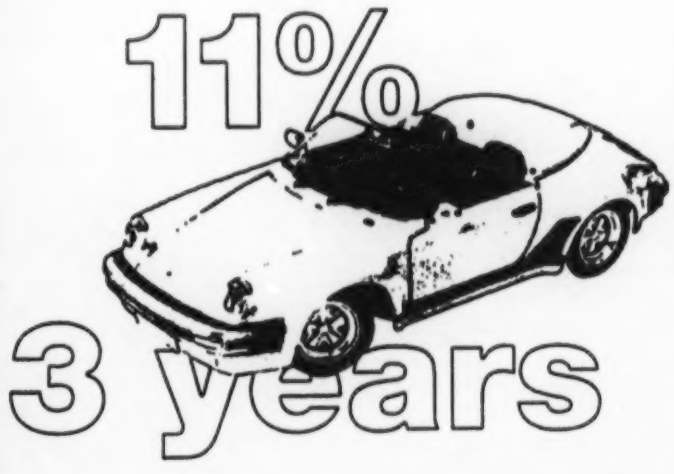
With so many important decisions based on the level of interest rates, it is not surprising that people want to know which way rates are going to move. However, with so many diverse elements influencing rates, it is also not surprising that people are not able to predict the direction of these movements precisely.

Even though we are not able to predict accurately and consistently how interest rates will move, these movements are clearly not random. To the contrary, they are strictly controlled by the most calculating master of all—the economic forces of the market.

Different Interests

As we have seen, certain factors affect the general level of interest rates. But why do the rates vary for different transactions? For example, on a typical day at a local financial institution, a lending officer might approve a $20,000 loan to the local school board for emergency repairs on the school's furnace and charge the board 8 percent interest for the use of the funds. Later, the banker might approve a used-car loan for $4,000, at 11 percent interest, to be paid in three years, and a small business loan for $17,000, at 8.5 percent interest, for a term of four years.

Meanwhile, the bank's investment officer submits a bid for a two-year Treasury note on which the bank wants to receive 6 percent interest, and purchases a 15-year general obligation municipal bond issued by the local city government. The bank will receive 8 percent interest on this bond. At the next desk, the new accounts officer opens an interest-paying checking account, which will pay a customer 1.5 percent interest.



Credit Transactions

As different as all these transactions may at first appear, they are the same in one respect—they all involve borrowing and lending funds. Each transaction has a lender, who exchanges funds for an asset in the form of an IOU or credit, and a borrower who exchanges the IOU for funds. Because credit, the IOU, is being bought and sold, these are called credit transactions. Most of us can easily see that the loan officer is providing credit—the bank is lending money to the school board, the person buying the used car, and the businessperson.

The other transactions are also credit transactions, although we generally think of them in different terms. We usually refer to the purchase of a Treasury note or a municipal bond as making an investment, but they are credit transactions because the bank is loaning money to the federal and city governments. By investing in the note and bond, the bank makes funds available directly to the government (or indirectly by replacing the previous holder of the government's debt). The bank, in return, receives interest payments from the government.

When the new accounts officer opened the checking account for the customer, the bank gained the use of funds. This, too, is a credit transaction in which the customer is the lender and the bank is the borrower. To compensate for the use of funds, the bank pays interest.

Degrees of Interest

Although all the transactions at the bank that morning were credit transactions, they all involved different interest rates, different prices of credit. As with other prices in a free market system, interest rates are determined by many factors. As we've seen, some factors are more or less the same for all credit transactions. General economic conditions, for example, cause all interest rates to move in the same direction over time.

Other factors vary for different kinds of credit transactions, causing their interest rates to differ at any one time. Some of the most important of these factors are:

- different levels and kinds of risk;
- different rights granted to borrowers and lenders, and
- different tax considerations.

Let's examine each of these.

Levels of Risk

Risk refers to the chance that something unfavorable may happen. If you go skydiving, the risks you assume are obvious. When you purchase a financial asset, say by lending funds to a corporation by purchasing one of its bonds, you also take a risk—a financial risk. Something unfavorable could happen to your money—you could lose all of it if the company issuing the security goes bankrupt, or you could lose part of it if the asset's price goes down and you have to sell before maturity.

Different people are willing to accept different levels of risk. Some people will not go skydiving under any circumstances, while others will go at the drop of a hat. In credit transactions, too, people are willing to accept different levels of risk. However, most people are risk averse; that is, they prefer not to increase risks with their money unless they receive increased compensation.

To illustrate, let's say we have a choice of buying two debt securities, which are bonds or IOUs issued by corporations or governments seeking to borrow funds. One security pays (meaning, we will receive) a certain five percent interest, while the other has a 50 percent chance of paying eight percent interest and a 50 percent chance of paying two percent. Which security should we buy? If we are risk averse investors/lenders, we would choose the security paying the certain five percent, because we would not view the uncertainty of return on the second security as an advantage.

If, on the other hand, the second security has a 50 percent chance of paying 15 percent interest and a 50 percent chance of paying two percent, we might be inclined to buy it because we might consider the higher potential return to be worth the risk.

Even though lenders are willing to accept different levels of risk, they want to be compensated for taking the risk. Therefore, as securities differ in level of risk, their interest rates tend to differ. Generally, interest rates on debt securities are affected by three kinds of risk:

- default risk,
- liquidity risk, and
- maturity risk.

Default Risk

For any number of reasons, even the most well-intentioned borrowers may not be able to make interest payments or repay borrowed funds on time. If borrowers do not make timely payments, they are said to have defaulted on loans. When borrowers do not make interest payments, lenders' returns (the interest they receive) are reduced or wiped out completely; when borrowers do not repay all or part of the principal, the lenders' return is actually negative.

All loans are subject to default risk since borrowers may die, go bankrupt, or be faced with unforeseen problems that prevent payments. Of course, default risk varies with different people and companies; nevertheless, no one is free from risk of default.

While investors/lenders accept this risk when they loan funds, they prefer to reduce the risk. As a result, many borrowers are compelled to secure their loans; meaning, they give the lender some assurances against default. Frequently, these assurances are in the form of collateral, some physical object the lender can possess and then sell in the event of default. For automobile loans, for example, the car usually serves as collateral. Other assurances could include a cosigner, another person willing to make payment if the original borrower defaults. Generally speaking, because secured loans are comparatively less risky, they carry a lower interest rate than unsecured loans.

As a borrower, the federal government offers firm assurances against default. As a result of the power to tax and authority to coin money, payments of principal and interest on loans made to (or securities purchased from) the U.S. government are, for all practical purposes, never in doubt, making U.S. government securities virtually default-risk free. Since investors tend to be risk averse and U.S. government securities are all but free from default risk, they generally carry a lower interest rate than securities from corporations.

Similarly, other types of borrowers represent different levels of risk to the lender. In each case, the lender needs to evaluate what are commonly called "the three Cs" of character, capital, and capacity. Character represents the borrower's history with previous loans. A history containing bankruptcies,

Character

Capacity

Capital

repossessions, consistently late or missed payments, and court judgments may indicate a higher risk potential for the lender. Capital represents current financial condition. Is the borrower currently debt-free, or relatively so in comparison with assets? They may represent a party with "thrifty" habits, who can take on additional debt without imposing an undue burden on other assets. Capacity represents the future ability to service the loan, i.e., make principal and interest payments. Income, job stability, regular promotions, and raises are all indicators to be considered.

Liquidity Risk

In addition to default risk, liquidity risk affects interest rates. If a security can be quickly sold at close to its original purchase price, it is highly liquid; meaning, it is less costly to convert into money than one that cannot be sold at a price close to its purchase price. Therefore, it is less risky than one with a wide spread between its purchase price and its selling price.

To illustrate, let's say that we have a choice between purchasing an infrequently-traded security of an obscure company, and a broadly-traded security of a well-known company, which we know we can sell easily at a price close to our purchase price. If we are risk averse, we would choose the security from the well-known company if both were paying the same interest rate.

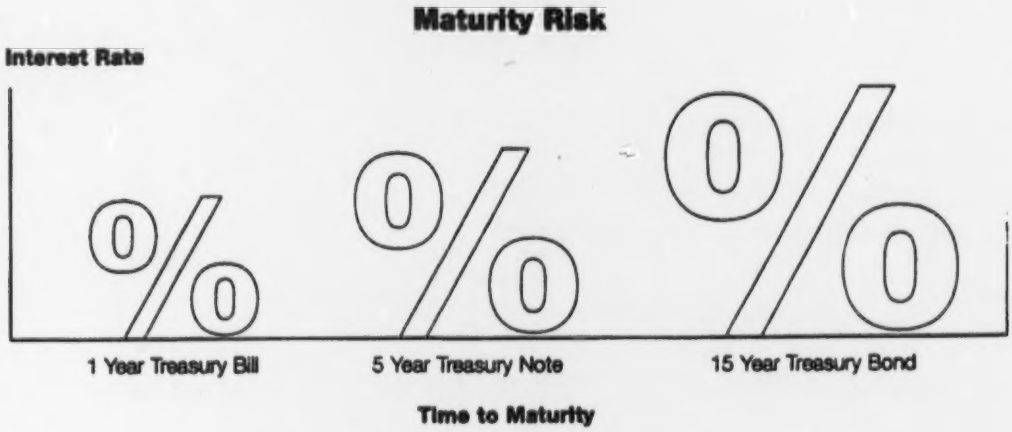
To encourage us to buy its security, the obscure company must pay a higher rate to compensate us for the difficulty we will experience if we want to sell.

Maturity Risk

Credit transactions usually involve lending/borrowing funds for an agreed upon period of time. At the end of that time the loan is said to have matured and must be repaid. The length of maturity is a source of another kind of risk—maturity risk.

Long-term securities are subject to more risk than short-term securities because the future is uncertain and more problems can arise the longer the security is outstanding. These greater risks usually, but not always, result in higher rates for long-term securities than for short-term securities.

To illustrate, let's examine U.S. government securities—Treasury bills (with original maturities of one year or less), Treasury notes (with original maturities of two to ten years), and Treasury bonds (with original maturities of over ten years). These securities are quite similar, except in length of maturity. As we have seen, U.S. government securities are virtually default-risk free, and because there is such a large and active market for them, they are also virtually liquidity-risk free.



If default and liquidity were the only kinds of risk in holding government securities, we would be inclined to think that they all would have the same interest rate. However, because of maturity risk, short-term Treasury bills usually pay less (have a lower interest rate) than longer-term Treasury notes and bonds.

Different Rights

Risk is not the only reason credit transactions can have different rates of interest. As we have seen, certain assurances, such as securing loans, also affect rates. Typically, borrowers write these assurances into their debt securities specifying the rights of both borrower and lender. Because these rights differ, debt securities tend to pay different rates of interest. Let's look at some of these rights in the more common debt securities.

Coupon and zero-coupon bonds. Most debt securities promise to repay the amount borrowed (the principal) at the end of the length of the loan, and also pay interest at specified times, such as every six months, throughout the term of the loan. Some of these bonds are issued with attached coupons, which lenders can clip and send in every six months or year to collect the interest that is due.

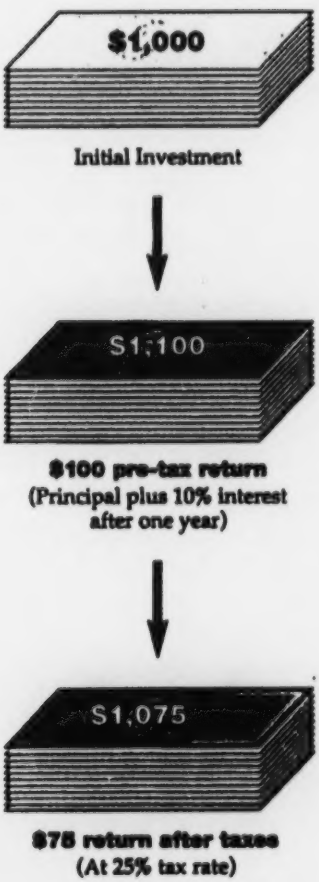
Zero-coupon bonds, however, make no interest payments throughout the life of the loan. Rather than pay interest, these bonds are sold at a price well below their stated face value. Although not usually thought of in such terms, a savings bond is like a zero-coupon bond in that it renders one payment at maturity.

Even though zero-coupon bonds make no interest payments, investors/lenders still need to know the return on these bonds so they can compare it to the return on a coupon bond or other alternative investment. To figure the return, or yield, investors compare the difference between their purchase price and selling price.

Since zero-coupon bonds provide lenders no compensation until the end of the loan period, borrowers issuing these bonds tend to pay a higher rate than borrowers issuing coupon bonds.

Convertible bonds. Some borrowers sell bonds that can be converted into a fixed number of shares of common stock. With convertible bonds, a lender (bondholder) can become a part owner (stockholder) of the company by converting the bond into the company's stock. Because investors generally view this right as desirable, borrowers can sell convertible bonds at a lower interest rate than they would otherwise have to pay for a similar bond that was not convertible.

Call provisions. Some bonds are callable after a specified date; that is, the borrower has the right to pay off part or all of it before the scheduled maturity date. Unlike convertible bonds which give certain rights to the lenders, call provisions give borrowers certain rights, the right to call the bond. As a result, borrowers must pay a higher interest rate than on similar securities without a call provision.



Tax Considerations

In addition to the level and kinds of risk and the different rights granted by different debt securities, taxes also play a significant role in affecting rates of return.

To illustrate, let's say you borrow $1,000 for a year at 10 percent interest. At the end of the year, you pay the $1,000 principal plus $100 interest. However, if the lender is in a 25 percent tax bracket, the lender will pay $25 in taxes on that $100. Thus, the lender's actual after-tax yield is reduced from 10 percent to 7.5 percent.

Different debt securities carry different tax considerations. Corporate bonds (loans to corporations) are subject to local, state, and federal taxes. U.S. government securities are subject to federal taxes, but exempt from local and state taxes. Municipal bonds are exempt from federal taxes, and in some states, exempt from local taxes.

Taking taxes into consideration, a lender will receive more after-tax interest income from a municipal bond paying 10 percent than from a corporate bond paying the same rate. This special tax-exempt status of municipal bonds enables state and local governments to raise funds at a relatively lower interest cost.

On the other hand, for corporations to attract lenders, they must pay a higher rate of interest to compensate for taxes.

Of course, borrowers will call (redeem) only when it is to their benefit. For example, when the general level of interest rates falls, the borrower can call the bonds paying high rates of interest and reborrow funds at the lower rate.

As partial compensation to the lender, the borrower often has to pay a penalty to call a bond. Naturally, a borrower will call a bond only if the advantages of doing so outweigh the penalty. In other words, interest rates would have to fall sufficiently to compensate for the penalty before a borrower would call a bond.

Municipal bonds. Municipal bonds are debt securities issued by local and state governments. Usually these governmental bodies issue either general obligation bonds or revenue bonds.

General obligation bonds, the more common type, are issued for a wide variety of reasons, such as building schools and providing social services. They are secured by the general taxing power of the issuing government.

Revenue bonds, on the other hand, are issued to finance a specific project—building a tollway, for example. The interest and principal are paid exclusively out of the receipts that the project generates.

Both kinds of municipal bonds are considered safe. However, because general obligation bonds are secured by the assets of the issuing government and the power of that government to tax, they are usually considered safer than revenue bonds, whose payments must come out of receipts of the specific project for which the bond is issued. As a result, general obligation bonds usually pay a lower rate of interest than revenue bonds.

Efficient Allocation

With so many different interest rates and so many different factors affecting them, it may seem that borrowing and lending would be hopelessly complicated and inefficient. In reality, however, the variety of interest rates reflects the efficiency of the market in allocating funds.

In analyzing investment opportunities, lenders look for an interest rate high enough to account for all their risks, rights, and taxes, as we have discussed. If the project will not pay that rate, they will look for other investments. For their part, borrowers will undertake only projects with returns high enough to cover at least the cost of borrowed funds.

The market, then, serves to assure that only worthwhile projects will be funded with borrowed funds. In other words, market forces and differences in interest rates work together to foster the efficient allocation of funds.

Additional Readings

For information about how to order these materials, contact the Federal Reserve Bank of Chicago's Public Information Center, 230 South LaSalle St., Chicago, IL 60604, (312) 322-5111.

The ABCs of Figuring Interest
Public Affairs Department
Federal Reserve Bank of Chicago
230 South LaSalle St.
Chicago, IL 60604
http://www.frbchi.org

Controlling Interest
(Reprint due summer 2000)
Public Affairs Department
Federal Reserve Bank of Chicago
230 South LaSalle St.
Chicago, IL 60604
http://www.frbchi.org

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Points of Interest

Classroom Questions for Points of Interest

- Economics and/or Consumer education questions & activities
- Answers to questions on the cover
- Points of Interest Booklet (on-line version)
  http://www.frbchi.org/pubs-speech/publications/booklets/points_interest/points_interest.html
- Ordering Information

Economics and/or Consumer Education

Content Questions & Activities

1. When we say that an interest rate is a price, who is charging this price and why? (page 4)
2. How are interest rates affected by the supply and demand of funds? (page 4)
3. How does the process of financial intermediation work and who is involved? (page 6)
4. How does the Fed monitor interest rates? Which rates does it control and what effect might that have on other rates? (page 7)
5. Explain how inflation reduces the purchasing power of money. (page 7)
6. Explain in your own words how the Fed would act to counter periods of increased economic activity and/or periods of decreased economic activity. (page 9)
7. What are the tools the Fed can use to influence the supply of credit? (page 10)
8. What are "the three Cs" that a lender needs to evaluate when deciding whether or not to grant a loan? (page 14)

9. What is maturity risk? Give an example. (page 15)

10. Have students work in pairs and role-play the exchange of borrower and lending officer. Have them pay special attention to "the three Cs" as students attempt to attain a loan for a/an:

    new red mustang
    internet business
    student loan

    Example: A senior in high school wants to purchase a brand new red mustang. The student has been an above average student throughout high school, participated in clubs and sports, and has taken on leadership roles. The loan officer would say that the student's character is very good. The student has a savings account with a balance of one thousand dollars. However, the student has no other form of capital - no stocks, bonds, car, etc. Lastly, the student is planning to attend college after graduation and be a full-time student. The loan officer would tell the student that he did not have the capacity to pay off the loan over the next three to five years because he is not going to be able to work any substantial hours while attending classes.

    Overall, the loan officer would deny the loan to the student at this point based on the evaluation of the "three Cs."

11. Have students research and bring to class examples of municipal bonds that have been passed in their town.

Application Questions & Activities

1. Take a tour of a Federal Reserve Bank.

2. Have students discuss with their parents and/or an older relative to find out what happens to a loan when a purchase is made during a period of high inflation rates. Encourage students to bring back to class examples of when their parents made large purchases or decided to forego a purchase for a later time.

3. Encourage students that have made a large purchase, i.e. a car or applied for and received a student loan for college, and discuss what the process was like and to explain how long they will be carrying this debt around and how they hope to repay it.

Answers to content questions

1. The lenders/savers are charging this price because they need compensation for not having use of the funds they have loaned out.

2. If the supply of credit from lenders rises relative to the demand from borrowers, the price will tend to fall as lenders compete to find use for their funds. On the other side, if the demand rises relative to the supply, the interest rate will tend to rise as borrowers compete for increasingly scarce funds.

3. The process of financial intermediaton involves bringing together borrowers and lenders/savers. This is the process that brings together two groups of people that have two totally different needs. The supply of credit comes from savings - funds not needed or used for current consumption. Savings are found in banks (savings accounts), insurance premiums, pension fund contributions, and social security just to name a few. Financial institutions pool the savings and make them available to people who want to borrow.

4. The Fed affects the general level of interest rates by influencing the total supply of money and credit that banks can create. Affecting bank reserves exerts the influence on the supply of money and credit. Students should answer that the Fed controls the Discount Rate and strongly influences the Fed Funds Rate. These, in turn, affect the price of loanable funds for banks and other financial institutions.

5. Inflation reduces the purchasing power of money. Each percentage point increase in inflation represents approximately a 1- percent decrease in the quantity of real goods and services that can be purchased with a given number of dollars in the future.

6. When economic activity is expanding consumers demand substantial amounts of credit. On the other hand, when the future looks grim, consumers and businesses tend to reduce major purchases. The Fed can influence the availability of money and credit by adjusting the level and/or price of bank reserves. The Fed has three "tools" that it can use to affect reserves. First, it sets reserve requirements that banks must hold. Second, it can buy and sell government securities. Third, it can set the "discount rate," which affects the price of reserves banks borrow from the Fed through the "discount window." These, in turn, impact the price of credit.

7. Setting reserve requirements that banks must hold; by buying and selling government securities in open market operations; and by setting the discount rate.

8. Character, capital and capacity

9. Maturity risk is the fact that the amount of time it takes to pay off a loan can add to the uncertainty of the lender getting their money back.

Ordering Information

Points of Interst: What determines Interest Rates? is available free from the Federal Reserve Bank of Chicago. It can be ordered on-line using our on-line order form, or by contacting our Publications Department at

on-line order form:
http://www.frbchi.org/pubs-speech/publications/print_order_script.html

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